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be very happy, on being applied to (Nachtegaalstraat 32), to send them a specimen. It is no doubt an inconvenience of this method that the observer must wait for some days before he can make his sections. This, however, is no serious objection, as the operations described take up but very little of his time, so that he may do other work whilst his objects are getting ready for imbedding. Moreover, if many objects are to be treated in this manner, it will be easy, by a regular distribution of labor, to have always material ready for examination. Other objects fit for trying the imbedding method on are the growing points of the stems of *Vicia Faba*, *Elodea Canadensis*, *Æsculus Hippocastanum*, *Acer pseudoplatanus*, *Equisetum*, etc. I also obtained very beautiful specimens by making longitudinal and transverse sections of whole plants of *Mnium hornum*, the first showing the antheridia and archegonia, the second showing very plainly the disposition of the leaves and their development.

Utrecht, Holland.

BRIEFER ARTICLES.

Some results of mycological work in U. S. Dept. of Agriculture.—

Among the discoveries of botanical interest as well as practical importance made through the efforts of the commissioner of agriculture the past season, the following may be mentioned:

1st. That of *Greeneria* (*G. fuliginea* Scribner & Viala), the fungus which causes what grape-growers term "bitter rot." The studies of this fungus were begun in the vineyard of Hon. Wharton J. Green, of Fayetteville, N. C., whose courtesy enabled very careful observations to be made upon its external appearance and effects, and, in constituting a new genus upon the species discovered, it was a pleasure to the authors to name it for Mr. Green as a mark of their esteem and respect. Later observations showed this fungus to be widely distributed over the country east of the Mississippi and westward to Texas. Under special conditions it does much damage to the crop, attacking the berries during the period of ripening.

2d. That of *Coniothetium diplodiella* Sacc., which was first discovered in Italy, in 1879, by M. Spegazzini. In 1885 it was observed for the first time in France. Its distribution in this country is not known, but its present limits seem to be southwestern Missouri and northeastern Indian Territory, where it was observed for the first time the present season. Its effect on the berries has led to the use of the term "white rot" for this disease. In France, the past season, it has occasioned considerable alarm on account of the extent of its ravages.

3d. That of "Pourridie," or root rot of the grape. The root rot of fruit trees, especially of the pear, has already been noted in this country, but I am not aware that there has been any published notice of the root rot of the vine. This disease was observed in Missouri, Texas and California. It usually appears in low parts of the vineyard or where the soil is poorly drained, and is especially liable to occur where the land has been recently in forest. It was on land from whence oak trees had been removed that the disease was observed in California. Although the fungi causing the root rot of vines in this country have not been scientifically determined, they are doubtless the same as have been found in Europe, and so well studied by M. R. Hartig and by M. P. Viala, viz.: *Dematophora necatrix* or *Agaricus melleus*. Magnificent growths of the latter fungus were seen by the writer in full development around dead or dying oak trees near Dallas, Texas. It is possible that this fungus is the cause of the serious losses which the fruit-growers about Dallas suffer from the "root-rot" of peach and other trees. Efforts are being made to determine whether or not this is the cause.

4th. That of *Septosporium Fuckelii* Thümen. This fungus was found infesting the leaves of *Vitis Californica* growing in the cañons near Orange, California. On some of the vines the foliage was almost entirely destroyed by its attacks. It is a fungus similar in its habits and action on the host to *Cercospora vitis* Sacc., and its presence need not be regarded with alarm. It was not seen on the cultivated grapes, although it appears to be not infrequent in the vineyards of Europe. The appearance of the upper surface of the leaves attacked bears a striking resemblance to those infested with mildew (*Peronospora*), but the black spots visible on the under surface at once distinguish it from that fungus.

5th. That it is very doubtful if *Peronospora viticola* has yet been introduced into California. The districts supposed to be infested with this parasite, from the reports received by the Department of Agriculture, were found, upon investigation, to be entirely free from this disease.

6th. That of *Uromyces betæ* on the cultivated beets in southern California. So far as can be ascertained from available authorities, this is the first discovery of this disease in the United States. It is common in Europe, where it occasions some damage by diminishing the sugar product of the infested plants. It is one of the species whose life history has been fully traced, affording us the knowledge which will enable us to control it, should it become troublesome to the beet sugar interests.

7th. That the stylospores of *Physalospora Bidwellii* may remain intact in the berries through the winter, and will germinate in the spring when placed in suitable conditions. From this it appears that the ascospores are not essential to the perpetuation of the fungus. The expulsion of the ascospores from their perithecia and their subsequent germination, as seen in the laboratory of the Department, have already been recorded.

8th. That *Phyllosticta labruscæ* and *Phoma uvicola* are identical, an important fact in considering the question of treatment.

9th. That of finding the mature form of *Ramularia Tulasnei*, or *Sphaerella Fragariæ*. The perithecia with their fully developed asci and ascospores were found on specimens communicated by Mr. Frank Earl, in the winter of 1886. Later, the fungus was found in all its stages on one and the same leaf. Microscopical preparations have been made which exhibit all the forms in a single section.

10th. That of finding early in December the living mycelium of *Roestelia penicellata* in the tissues of apple twigs, and its evident growth from the latter into prematurely forming leaves, for upon the latter, which were scarcely more than an inch in length, well developed spermatogonia were noted December 7th. The shoot bearing these leaves had, at this date, been kept partly immersed in water in a warm room for one week. The twigs in question were from a tree which, for a succession of years, has had its foliage badly infested with the *Roestelia*. This fact was somewhat surprising owing to its isolated location, far from any Juniperus or cedar. The matter is easily explained, however, if the mycelium of the fungus is perennial within the host.

11th. That *Uredo ficus* is injurious to the foliage of the fig tree in several localities in Florida.

12th. That of finding *Puccinia pruni spinosæ*, attacking the leaves of peach trees in Texas and southern California, causing more or less injury. This fungus has been found also on the wild goose plum and the native plum in Texas, and on apricots.—F. LAMSON SCRIBNER, *Chief of the Section of Vegetable Pathology, U. S. Department of Agriculture, Washington, D. C., Dec. 8, 1887.*

A handy herbarium.—The practical study of botany is often much hindered by the amount of trouble many of us busy men find in the handling of our specimens. Many an hour's work has been turned by the present busy laborer to other studies because, having at his disposal only a few moments, so much of the time will need be spent in hunting up what is wanted.

In this western country houses are not, as in New England, of many and large rooms. So my specimens, identified, unidentified and for exchange, have been forced, by dire necessity, to a space close under a roof, dark, low and hard to reach. It becomes, therefore, a necessity to invent something that will not take up much room, and yet will hold several hundred specimens in natural arrangement where they can be examined at a moment's notice. Here is the way in which the writer solved the enigma for a very few cents: The materials necessary are four up-rights five feet high, two and one half inches broad, and one-fourth of an inch thick; twelve pieces of the same width and thickness twenty-eight inches long; and twelve similar pieces eighteen inches long. These are